

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Nagesh R. Basavanhally, *et al.*
Serial No.: 10/816,527
Filed: March 1, 2004
Title: HIGH DENSITY NANOSTRUCTURED INTERCONNECTION
Grp./A.U.: 2822
Examiner: Kiesha L. Rose

Commissioner for Patents
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I hereby certify that this correspondence is being electronically filed
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May 24, 2006 (Date)

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(Signature of the person signing the certificate)

Sir:

PRE-APPEAL BRIEF REQUEST FOR REVIEW

The Applicants have carefully considered this application in connection with the Examiner's Final Rejection mailed March 27, 2006, and respectfully request a pre-appeal brief review of this application in view of the following remarks.

REMARKS/ARGUMENTS

The Applicants originally submitted Claims 1-14 in the application. In a previous response to an Examiner's Action, the Applicants canceled Claim 5 without prejudice or disclaimer and added New Claims 15-21. Presently, the Applicants have added New Claims 18-21. Accordingly, Claims 1-4 and 6-21 are currently pending in the application.

I. Rejection of Claims 1-4 and 6-14 under 35 U.S.C. §102

The Examiner has rejected Claims 1-4 and 6-14 under 35 U.S.C. §102(e) as being anticipated by EPO Patent No. 1320111 to Fuhrmann, *et al.* ("Fur"). Independent Claims 1, 9, 10 and 13, in one fashion or another, currently include the element that attractive forces couple the first surface and second surface together. Fur fails to disclose this element.

In contrast to the present invention, Fur is directed to a carbon nanotube contact for MEMS. (Title) Fur teaches that its device is a low voltage switch consisting of two contact elements having a contact material forming the contact surface and comprising nanotubes. Fur further discloses that the nanotubes are arranged perpendicular to the substrate and are made of carbon. Fur additionally teaches that upon closing the switch, the nanotube layers of the two contact elements penetrate each other like two brushes, thereby forming many contact lines as opposed to the conventional contact points.

Fur, however, fails to disclose what forces cause the two contact elements to penetrate each other like two brushes. Fur does reference a relay in its description, presumably forces created by the relay would bring and hold the two contact elements together when the switch is closed and remove and keep apart the two contact elements when the switch is open. Accordingly, external

forces, such as those created by the relay, and not attractive forces, would most likely be holding the two contact elements together. Nevertheless, Fur fails to specifically disclose what forces hold the two contact elements together, and thus fails to teach this claimed element.

The Examiner attempts to argue that Fur teaches an attractive force because both the nanostructures and the first and second surface can be formed of metal, and that because an electrical connection is made there between an attractive force would be generated. (See page 3 of the Examiner's Action dated March 27, 2006). The Examiner's action is vague as to what type of attractive force exists. Accordingly, the Applicants can only assume the Examiner is referring to an electrostatic force being generated. If so, the Examiner is incorrect that the electrical connection would create such an electrostatic force. In essence, creating an electrical connection between the nanostructures would undoubtedly place the nanostructures at the same potential. However, when the nanostructures are at the same potential no electrostatic (or magnetic for that matter) force can exist. Accordingly, if an electrical connection exists, as Fur so desires and requires, no such electrostatic force can exist. Thus, Fur does not teach that such an electrostatic force would hold the two contact elements together.

It should also be noted that because the device of Fur is a switch, the forces holding the two contact elements together need be easily overcome to open the switch. Accordingly, the attractive forces of the nanostructures included within the independent claims would frustrate the switching capability of the device of Fur, if not cause it to self-destruct when switching. For this reason also, Fur does not teach the claimed attractive forces.

Therefore, Fur does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claims 2-4, 6-8, 11-12 and 14 are dependent upon

Claims 1, 9, 10 and 13, Fur also cannot be an anticipating reference for Claims 2-4, 6-8, 11-12 and 14.

In view of the foregoing remarks, the cited reference does not support the Examiner's rejection of Claims 1-4 and 6-13 under 35 U.S.C. §102(e). The Applicants therefore respectfully request the Review Panel to remove the rejection of independent Claims 1, 9, 10 and 13, and the Claims dependent thereon.

II. Rejection of Claims 15-17 under 35 U.S.C. §102

The Examiner has rejected Claims 15-17 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 2002/0014667 to Shin, *et al.* ("Shin"). Independent Claim 15 includes the element of an intermediate layer having a first plurality of nanostructures disposed on one side thereof and a second plurality of nanostructure disposed on an opposing side thereof, the intermediate layer configured to be positioned between and adhere a first surface to a second surface. Shin fails to teach this element.

In contrast to that presently claimed, Shin teaches that a first set of nanostructures **20** are grown from a first catalyst pattern **12** and that a second set of nanostructures **20b** are grown from a second catalyst pattern **12b**, and that the first and second sets of nanostructures **20**, **20b**, are brought into contact with an intermediate metal layer **30**. (*See*, Fig. 12B of Shin) Accordingly, wherein the claimed intermediate structure has its nanostructures formed on opposing sides thereof to couple its first and second surfaces, Shin has its nanostructures formed on its first and second surfaces and brought into contact with its intermediate layer. These two configurations are distinctly different.

Therefore, Shin does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claims 16-17 are dependent upon Claim 15, Shin also cannot be an anticipating reference for Claims 16-17.

In view of the foregoing remarks, the cited reference does not support the Examiner's rejection of Claim 15 under 35 U.S.C. §102(b). The Applicants therefore respectfully request the Review Panel to remove the rejection of independent Claim 15, and the Claims dependent thereon.

III. Conclusion

In view of the foregoing remarks, the Applicant sees all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicits a Notice of Allowance for Claims 1-4 and 6-21.

The Applicant requests the Reviewers to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

HITT GAINES, PC

A handwritten signature in black ink, appearing to read "Greg H. Parker", written over a horizontal line.

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